

**What Is Claimed Is:**

1           1.       A method for optimizing traffic on a distributed content delivery  
2 network, comprising:  
3           receiving a request for content from a client at a directory server;  
4           determining if the client is a member of an arena in a list of arenas,  
5 wherein an arena is a specified set of nodes on a network; and  
6           if the client is a member of the arena, applying routing rules to the delivery  
7 of content to the client, including routing rules specific to the arena.

1           2.       The method of claim 1, further comprising defining an arena by  
2 receiving input from a user and using the input to specify one or more edge  
3 routers that surround nodes on the network that are members of the arena.

1           3.       The method of claim 1, wherein after an arena is defined, a node  
2 can be dynamically assigned to and removed from the arena as the node is  
3 physically moved.

1           4.       The method of claim 1, further comprising defining an arena by  
2 receiving input from an administrator and using the input to specify a list of  
3 addresses for nodes that comprise the arena.

1           5.       The method of claim 1, wherein a routing rule can prohibit traffic  
2 across a specific network link.

1           6.       The method of claim 1, wherein a routing rule can prohibit traffic  
2 across a specific network link when the network link reaches a predetermined  
3 utilization.

1           7.       The method of claim 1, wherein the routing rule specifies a  
2 maximum amount of bandwidth that can be used for content delivery purposes on  
3 a specific network link.

1           8.       The method of claim 1, wherein applying routing rules to the  
2 delivery of content to the client involves:  
3           attempting to receive content at the client from nodes on a local subnet;  
4           if no nodes are available on the local subnet, attempting to receive the  
5 content from nodes in a local arena;  
6           if no nodes are available on the local arena, attempting to receive the  
7 content from nodes in non-local arenas as specified by a fallback list;  
8           if no nodes are available on non-local arenas, attempting to receive the  
9 content from nodes that are topologically close on a router graph, wherein the  
10 router graph specifies how the nodes on the network are interconnected; and  
11           if no nodes are available on the router graph, attempting to receive the  
12 content from an origin server.

1           9.       The method of claim 8, wherein the fallback list for arenas  
2 specifies an ordering of arenas.

1           10.    A computer-readable storage medium storing instructions that  
2   when executed by a computer cause the computer to perform a method for  
3   optimizing traffic on a distributed content delivery network, the method  
4   comprising:  
5        receiving a request for content from a client at a directory server;  
6        determining if the client is a member of an arena in a list of arenas,  
7   wherein an arena is a specified set of nodes on a network; and  
8        if the client is a member of the arena, applying routing rules to the delivery  
9   of content to the client, including routing rules specific to the arena.

1           11.    The computer-readable storage medium of claim 10, wherein the  
2   method further comprises defining an arena by receiving input from a user and  
3   using the input to specify one or more edge routers that surround nodes on the  
4   network that are members of the arena.

1           12.    The computer-readable storage medium of claim 10, wherein after  
2   an arena is defined, a node can be dynamically assigned to and removed from the  
3   arena as the node is physically moved.

1           13.    The computer-readable storage medium of claim 10, wherein the  
2   method further comprises defining an arena by receiving input from an  
3   administrator and using the input to specify a list of addresses for nodes that  
4   comprise the arena.

- 1           14.     The computer-readable storage medium of claim 10, wherein a  
2 routing rule can prohibit traffic across a specific network link.
- 1           15.     The computer-readable storage medium of claim 14, wherein a  
2 routing rule can prohibit traffic across a specific network link when the network  
3 link reaches a predetermined utilization.
- 1           16.     The computer-readable storage medium of claim 10, wherein the  
2 routing rule specifies a maximum amount of bandwidth that can be used for  
3 content delivery purposes on a specific network link.
- 1           17.     The computer-readable storage medium of claim 10, wherein  
2 applying routing rules to the delivery of content to the client involves:  
3           attempting to receive content at the client from nodes on a local subnet;  
4           if no nodes are available on the local subnet, attempting to receive the  
5 content from nodes in a local arena;  
6           if no nodes are available on the local arena, attempting to receive the  
7 content from nodes in non-local arenas as specified by a fallback list;  
8           if no nodes are available on non-local arenas, attempting to receive the  
9 content from nodes that are topologically close on a router graph, wherein the  
10 router graph specifies how the nodes on the network are interconnected; and  
11           if no nodes are available on the router graph, attempting to receive the  
12 content from an origin server.
- 1           18.     The computer-readable storage medium of claim 17, wherein the  
2 fallback list for arenas specifies an ordering of arenas.

1           19.     An apparatus for optimizing traffic on a distributed content  
2 delivery network, comprising:  
3           a receiving mechanism configured to receive a request for content from a  
4 client at a directory server;  
5           a determination mechanism configured to determine if the client is a  
6 member of an arena in a list of arenas, wherein an arena is a specified set of nodes  
7 on a network; and  
8           a routing mechanism configured to apply routing rules to the delivery of  
9 content to the client, including routing rules specific to the arena, if the client is a  
10 member of the arena.

1           20.     The apparatus of claim 19, further comprising a definition  
2 mechanism configured to define an arena by receiving input from a user and using  
3 the input to specify one or more edge routers that surround nodes on the network  
4 that are members of the arena.

1           22.     The apparatus of claim 19, wherein after an arena is defined, a  
2 node can be dynamically assigned to and removed from the arena as the node is  
3 physically moved.

1           23.     The apparatus of claim 19, further comprising a definition  
2 mechanism configured to define an arena by receiving input from an administrator  
3 and using the input to specify a list of addresses for nodes that comprise the arena.

1           24.    The apparatus of claim 19, wherein a routing rule can prohibit  
2 traffic across a specific network link.

1           25.    The apparatus of claim 24, wherein a routing rule can prohibit  
2 traffic across a specific network link when the network link reaches a  
3 predetermined utilization.

1           26.    The apparatus of claim 19, wherein the routing rule specifies a  
2 maximum amount of bandwidth that can be used for content delivery purposes on  
3 a specific network link.

1           27.    The apparatus of claim 19, wherein the routing mechanism is  
2 further configured to:  
3           attempt to receive content at the client from nodes on a local subnet;  
4           attempt to receive the content from nodes in a local arena if no nodes are  
5 available on the local subnet;  
6           attempt to receive the content from nodes in non-local arenas as specified  
7 by a fallback list if no nodes are available on the local arena;  
8           attempt to receive the content from nodes that are topologically close on a  
9 router graph if no nodes are available on non-local arenas, wherein the router  
10 graph specifies how the nodes on the network are interconnected; and  
11           attempt to receive the content from an origin server if no nodes are  
12 available on the router graph.

1           28.    The apparatus of claim 27, wherein the fallback list for arenas  
2 specifies an ordering of arenas.